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University Social Responsibility: Identifying and Classifying Indicators through Confirmatory Factor Analysis

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A B S T R A C T

One of the main missions of universities is to contribute to the development and transformation of societies through education and research as two key axes of their responsibility. The connection and communication between the university and society - at the local, national and international levels - strengthens this issue and lays the groundwork for the promotion of the university social responsibility. The university social responsibility plays a role not only in recognizing environmental issues and challenges, but also provides the possibility of providing practical solutions to the needs of society. However, one of the main challenges in this area is that it is not clear how to classify and evaluate the indicators of university social responsibility. This study, using the confirmatory factor analysis, has presented a comprehensive model for classifying the indicators of social responsibility of universities. The results obtained show that the Confirmatory Factor Analysis can be classified into seven main axes: social development, environmental institution, ethical issues, human development, scientific-cultural, partnership, and research affairs. Each of these components has subsets that are presented in the final research model. This model can be created to assess and evaluate the social status of universities and also be used in reforming higher education policymaking pathways.

Keywords: *Social responsibility, confirmatory factor analysis, index, university.*

Introduction

Corporate Social Responsibility (CSR) reflects organizations' commitments to social and environmental concerns beyond their economic obligations. Extensive research has demonstrated that CSR adoption positively influences organizational performance, financial outcomes, reputation, employee commitment, and brand differentiation. In parallel with the development of international CSR frameworks such as ISO 26000 and SA8000, attention has increasingly turned toward the social responsibility of universities as distinctive educational and research institutions with broad societal impacts.

Traditionally defined as higher education institutions focused on teaching and knowledge production, universities are now widely recognized as complex social systems with multifaceted educational, research, cultural, and societal roles. Over time, philosophical perspectives on the mission of universities have evolved from purely theoretical approaches emphasizing fundamental research to more practical orientations addressing societal, economic, and technological needs. Contemporary views integrate these perspectives, defining universities as institutions that combine liberal and professional education, basic and applied research, and measurable social and economic impacts. Accordingly, University Social Responsibility (USR) encompasses the entire university system, including organizational structures, human capital, institutional outputs, and societal outcomes.

With the transition to knowledge-based economies, universities have assumed a more prominent role in social and economic development. Beyond education and research, USR has emerged as a key dimension of higher education governance and accountability, contributing to sustainable development. Although USR has been discussed in the literature since the 1970s, it is now regarded as a strategic necessity rather than a purely conceptual construct. Universities are expected to assess the social consequences of their activities and actively promote social responsibility through education, research, industry collaboration, and community engagement.

International studies reveal that USR indicators vary significantly across countries, reflecting differences in national policies, socio-economic contexts, and higher education systems. While numerous models and dimensions of USR have been proposed globally, studies in Iran have largely focused on conceptualization and qualitative model development, often constrained by limited geographic scope and a lack of empirical validation. This has resulted in the absence of a comprehensive, localized, and data-driven framework for assessing USR in Iranian universities.

To address this gap, the present study employs Confirmatory Factor Analysis (CFA) to develop and validate an empirically grounded and operational classification of USR indicators based on real data from universities in Yazd Province. By moving beyond descriptive approaches, the proposed model offers a robust framework for evaluating university social responsibility and provides practical insights for higher education policymakers and university administrators seeking to improve social responsibility performance and policy effectiveness.

Methodology

This applied study employed a mixed-methods (qualitative–quantitative) approach to develop and validate a comprehensive model of University Social Responsibility (USR). The rationale for adopting this combined methodology was to integrate theoretical foundations with empirical evidence, ensuring both conceptual rigor and practical relevance in identifying and analyzing USR indicators. In the qualitative phase, relevant literature was systematically reviewed to extract preliminary indicators, and an initial model and questionnaire were developed based on prior research in the field. To establish content validity, the questionnaire was refined through in-depth interviews with university professors and academic experts. The review process continued until theoretical saturation was achieved, meaning that additional participants did not contribute new insights. The finalized questionnaire was then pilot-tested, and its reliability was assessed using Cronbach's alpha.

Following confirmation of validity and reliability, the questionnaire was distributed among the statistical population, consisting of faculty members and staff from three public universities in Yazd Province (Yazd, Ardakan, and Meybod). Given the requirements of confirmatory factor analysis (CFA) for larger sample sizes, 200 questionnaires were distributed, of which 190 valid responses were retained for analysis after excluding incomplete cases. Participants were selected from experienced individuals who demonstrated both willingness and capability to contribute to the study.

In the quantitative phase, the proposed model was evaluated using second-order confirmatory factor analysis through SMART PLS software. Factor loadings were examined to ensure adequate relationships between observed items and their respective constructs (acceptable threshold > 0.40). Regression coefficients were tested to assess structural relationships among variables. Convergent validity was evaluated using Cronbach's alpha, Composite Reliability (CR), and Average Variance Extracted (AVE), while discriminant validity was assessed using the Fornell–Larcker criterion and cross-loadings matrix. Finally, the model's predictive power was examined using the Stone–Geisser Q^2 index, with values of 0.02, 0.15, and 0.35 indicating weak, moderate, and strong predictive relevance, respectively. The integration of qualitative and quantitative methods enhanced the comprehensiveness, robustness, and credibility of the proposed USR model.

Findings

The findings of this study are presented in accordance with the sequential stages outlined in the research methodology. Initially, a 32-item questionnaire was developed based on the review study by Mobed and Nadizadeh (2022), using a five-point Likert scale ranging from "very high" to "very low" to assess the importance and role of each item in University Social Responsibility (USR). Content validity was confirmed through expert review by university professors, and necessary revisions were incorporated. Preliminary reliability testing was conducted on 33 pilot responses using Cronbach's alpha and Composite Reliability (CR) in SMART PLS software. All reliability coefficients exceeded the acceptable threshold of 0.70, confirming the instrument's internal consistency.

The finalized questionnaire was distributed among 200 faculty members and staff of public universities in Yazd Province during spring and summer 2024. After excluding incomplete responses, 190 valid questionnaires were analyzed. The proposed research model, consisting of seven primary dimensions and their corresponding indicators, was tested using Partial Least Squares Structural Equation Modeling (PLS-SEM). Factor loadings were examined to assess measurement reliability. With the exception of two items (one in the social development dimension and one in the scientific–cultural dimension) that showed loadings below 0.40 and were subsequently removed, all remaining loadings exceeded the acceptable threshold, with main construct loadings above 0.78, indicating strong measurement reliability.

Structural model assessment revealed that all regression coefficients were statistically significant ($p < 0.05$; T-values > 1.96), confirming that the seven identified dimensions significantly predict the dependent variable, USR. Convergent validity was established through Cronbach's alpha, CR (both > 0.70), and Average Variance Extracted (AVE > 0.50) for all constructs. Discriminant validity was confirmed using the Fornell–Larcker criterion and cross-loadings analysis, demonstrating adequate differentiation among constructs. Furthermore, the model's predictive relevance, assessed using the Stone–Geisser Q^2 index, yielded values above 0.35 across all endogenous constructs, indicating strong predictive power. Overall, the results confirm that the proposed model is both statistically robust and practically capable of accurately assessing University Social Responsibility.

Conclusion

This study aimed to model and categorize the key indicators of University Social Responsibility (USR) and to develop a valid measurement framework for assessing universities' social performance. Using Confirmatory Factor Analysis (CFA), the research identified 30 final items grouped into seven core dimensions: social development, environmental actions, ethical issues, human development, scientific-cultural activities, participation, and research affairs. A structured questionnaire was designed to operationalize these dimensions and provide a reliable tool for evaluating the social responsibility status of universities. The primary contribution of the study lies in the systematic classification of USR indicators and the development of a comprehensive assessment instrument that can serve as a standardized reference for higher education institutions.

The findings offer valuable guidance for educational policymakers—particularly the Ministry of Science, Research and Technology—and university administrators in designing evidence-based strategies to strengthen USR. Clearly defined and scientifically categorized indicators can support the formulation of national policies, development of evaluation standards, enhancement of sustainable development programs, and creation of incentive mechanisms for high-performing universities. Incorporating USR indicators into university evaluation and ranking systems can further institutionalize social responsibility

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as a strategic priority. Importantly, the study emphasizes that strengthening university social responsibility is not merely a managerial initiative but a pathway toward cultivating responsible citizens and fostering social and cultural capital.

Practical challenges identified during data collection include financial and administrative constraints, the absence of unified and binding policy frameworks, limited university–industry collaboration, cultural and policy resistance at the ministerial level, lack of integrated data systems, and insufficient formal monitoring mechanisms. Addressing these barriers is essential for ensuring the continuity and effectiveness of USR initiatives.

The proposed model enables systematic monitoring, comparative analysis, and strategic planning in the field of USR. Universities are encouraged to implement educational workshops, establish supportive and incentive-based policies, enhance partnerships with governmental and non-governmental organizations, and adopt continuous monitoring systems—such as social responsibility awards or annual reporting mechanisms—to increase transparency and accountability. Future research is recommended to examine the short- and long-term impacts of USR programs, conduct comparative national and international analyses, explore the role of emerging technologies such as artificial intelligence in USR implementation, and investigate structural and policy-related barriers to effective execution, particularly within domestic higher education systems.

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